PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2000-332062

(43)Date of publication of application : 30.11.2000

(51)Int.Cl. H01L 21/60

(21)Application number : 11-136555

(22)Date of filing : 18.05.1999

(71)Applicant : SHINDO DENSHI KOGYO KK

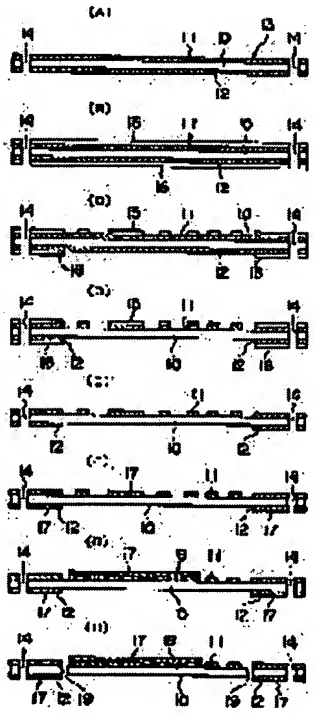
(72)Inventor : NAKAJIMA EIICHI

(54) MANUFACTURE OF TAB THIN-FILM TAPE CARRIER

(57)Abstract:

PROBLEM TO BE SOLVED: To omit sticking process and a peeling process of a lining material by forming a metallic foil, which is the same as the metallic film of a tape-like base film surface as a reinforcing material and forming a wiring pattern in a front side via a specified process in both surfaces thereof.

SOLUTION: After a perforation 14 is punched out in both sides of a tape-like base film 13, front and rear photoresists 15, 16 are applied on copper foils 11, 12 of both sides thereof. After the photoresists 15, 16 are subjected to exposure and development, both the front and rear sides are etched for pattern formation. Then, after photoresist of both the front and rear sides is peeled, plating 17 is applied and solder resist 18 is printed to the front side. Thereafter, an outer hole 19 is punched out for each package part, and the circumference of the perforation 14 in both sides is left reinforced by a copper foil 12 on the rear side.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

Copyright (C); 1998,2003 Japan Patent Office

* NOTICES *

JPO and NCIPI are not responsible for any
damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1] A metallic foil is formed in the front face of a tape-like base film. On this metallic foil A photoresist coat, In the manufacturing method of the thin film tape career for TAB which forms a circuit pattern in a side front through the process of exposure, development, etching, resist exfoliation, and plating The base film which formed the same metallic foil as a surface metallic foil in the rear face as reinforcing materials as said tape-like base film is used. The manufacturing method of the thin film tape career for TAB characterized by forming a circuit pattern in the both sides through the process of a photoresist coat, exposure, development, etching, resist exfoliation, and plating on a side front.
[Claim 2] The manufacturing method of the thin film tape career for TAB according to claim 1 a surface metallic foil and whose metallic foil on the back are copper foil.

[Translation done.]

* NOTICES *

JPO and NCIPI are not responsible for any
damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the tape career for TAB (Tape Automated Bonding) which mounts devices, such as IC, and is carried in an electronic-circuitry device, an electronic-circuitry substrate, a liquid crystal display, etc., and an ultra-thin tape career especially.
[0002]
[Description of the Prior Art] In recent years, the request of lightweight-izing of electronic equipment, thin-shape-izing, and a miniaturization is still stronger. In order to respond to these requests, a patchboard is thin and the flexible TAB product is developed.
[0003] However, since a machine did not cost the less than 50-micrometer ultra-thin tape career for TAB by the existing manufacturing facility, when the ultra-thin tape-like base film 3 which formed copper foil 2 in the front face of a polyimide film 1 as shown in drawing 1 is used for it, in order that thickness might give this the waist to some extent, as it backed additionally and was shown in drawing 2 , it was manufacturing.
[0004] Namely, as shown in (A), after sticking the backing material 4 on the rear face of a polyimide film 1 with adhesives 5 in drawing 2 , as shown in (B) - (J) one by one Punching of perforation 6, spreading of a photoresist 7, one side exposure and one side development, It was manufacturing through the process of etching, photoresist exfoliation, plating, printing of a solder resist 8, appearance processing (punching of the appearance hole 9) of each package part by punching, and backing material exfoliation of each package part. In addition, the backing material of the whole rear face may be exfoliated in the backing material exfoliation process of (J).
[0005]
[Problem(s) to be Solved by the Invention] However, there were many things without thermal resistance, the problem arose in the oven cure heated in the oven in a solder resist process, and backing material had the indispensable attachment process and exfoliation process of backing material.
[0006] Then, the object of this invention is shown in skipping the attachment process and exfoliation process of backing material, and aiming at a cost cut while it makes additional backing material unnecessary and solves the problem of the backing material in a solder resist process.
[0007]
[Means for Solving the Problem] In this invention, a circuit pattern is formed in those both sides through the process of a photoresist coat, exposure, development, etching, resist exfoliation, and plating as a tape-like base film on a side front using the base film which formed the same metallic foil as a surface metallic foil in that rear face as reinforcing materials. A surface metallic foil and a metallic foil on the back are good to use copper foil.
[0008]
[Embodiment of the Invention] Next, the gestalt of implementation of this invention is explained with reference to a drawing.
[0009] In this invention, as are shown in drawing 3 , and the copper foil 12 on a background is operated

as reinforcing materials and it is shown in drawing 4 using the tape-like base film 13 in which copper foil 11-12 was formed to front flesh-side both sides of a polyimide film 10, it manufactures.
[0010] First, as shown in (A) of drawing 4 , after carrying out punching of the perforation 14 of both sides to the tape-like base film 13, as shown in (B), the photoresist 15 of a front flesh side and 16 are applied on copper foil 11 and 12 of front flesh-side both sides.
[0011] Next, as shown in (C), after exposing and developing the photoresist 15 of a front flesh side, and 16, as shown in (D), table flesh-side both sides are etched for pattern formation. Etching on the back is performed about the place which needs thinness. In addition, when the handling by the user becomes a problem, etching on the back is performed by the final process of a user.
[0012] Subsequently, as shown in (E), after exfoliating a photoresist about front flesh-side both sides, plating 17 is performed as shown in (F).
[0013] Next, as shown in (G), after printing a solder resist 18 on a side front, as shown in (H), punching of the appearance hole 19 is carried out about each package part. Even after carrying out punching of this appearance hole 19, the perimeter of the perforation 14 of both sides becomes [being reinforced with copper foil 12 on the back with as, and].
[0014]
[Effect of the Invention] Since a photoresist coat, exposure, development, etching, resist exfoliation, and plating processing are performed about those both sides using the base film formed in the rear face by making the same metallic foil as a surface metallic foil into reinforcing materials according to this invention, the perimeter of the perforation of both sides becomes [being reinforced with as with a metal on the back, and]. Therefore, it can flow by the existing facility and the ultra-thin tape career which was not able to be manufactured until now can be manufactured by the existing facility. Moreover, since the attachment process and exfoliation process of backing material become unnecessary, a cost cut can be aimed at.

[Translation done.]

* NOTICES *

JPO and NCIPI are not responsible for any
damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

TECHNICAL FIELD

[Field of the Invention] This invention relates to the tape career for TAB (Tape Automated Bonding) which mounts devices, such as IC, and is carried in an electronic-circuitry device, an electronic-circuitry substrate, a liquid crystal display, etc., and an ultra-thin tape career especially.

[Translation done.]

* NOTICES *

JPO and NCIPI are not responsible for any
damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

PRIOR ART

[Description of the Prior Art] In recent years, the request of lightweight-izing of electronic equipment, thin-shape-izing, and a miniaturization is still stronger. In order to respond to these requests, a patchboard is thin and the flexible TAB product is developed.
[0003] However, since a machine did not cost the less than 50-micrometer ultra-thin tape career for TAB by the existing manufacturing facility, when the ultra-thin tape-like base film 3 which formed copper foil 2 in the front face of a polyimide film 1 as shown in drawing 1 is used for it, in order that thickness might give this the waist to some extent, as it backed additionally and was shown in drawing 2 , it was manufacturing.
[0004] Namely, as shown in (A), after sticking the backing material 4 on the rear face of a polyimide film 1 with adhesives 5 in drawing 2 , as shown in (B) - (J) one by one Punching of perforation 6, spreading of a photoresist 7, one side exposure and one side development, It was manufacturing through the process of etching, photoresist exfoliation, plating, printing of a solder resist 8, appearance processing (punching of the appearance hole 9) of each package part by punching, and backing material exfoliation of each package part. In addition, the backing material of the whole rear face may be exfoliated in the backing material exfoliation process of (J).

[Translation done.]

* NOTICES *

JPO and NCIPI are not responsible for any
damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

EFFECT OF THE INVENTION

[Effect of the Invention] Since a photoresist coat, exposure, development, etching, resist exfoliation, and plating processing are performed about those both sides using the base film formed in the rear face by making the same metallic foil as a surface metallic foil into reinforcing materials according to this invention, the perimeter of the perforation of both sides becomes [being reinforced with as with a metal on the back, and]. Therefore, it can flow by the existing facility and the ultra-thin tape career which was not able to be manufactured until now can be manufactured by the existing facility. Moreover, since the attachment process and exfoliation process of backing material become unnecessary, a cost cut can be aimed at.

[Translation done.]

* NOTICES *

JPO and NCIPI are not responsible for any
damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, there were many things without thermal resistance, the problem arose in the oven cure heated in the oven in a solder resist process, and backing material had the indispensable attachment process and exfoliation process of backing material.
[0006] Then, the object of this invention is shown in skipping the attachment process and exfoliation process of backing material, and aiming at a cost cut while it makes additional backing material unnecessary and solves the problem of the backing material in a solder resist process.

[Translation done.]

* NOTICES *

JPO and NCIPI are not responsible for any
damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

MEANS

[Means for Solving the Problem] In this invention, a circuit pattern is formed in those both sides through the process of a photoresist coat, exposure, development, etching, resist exfoliation, and plating as a tape-like base film on a side front using the base film which formed the same metallic foil as a surface metallic foil in that rear face as reinforcing materials. A surface metallic foil and a metallic foil on the back are good to use copper foil.
[0008]
[Embodiment of the Invention] Next, the gestalt of implementation of this invention is explained with reference to a drawing.
[0009] In this invention, as are shown in drawing 3 , and the copper foil 12 on a background is operated as reinforcing materials and it is shown in drawing 4 using the tape-like base film 13 in which copper foil 11-12 was formed to front flesh-side both sides of a polyimide film 10, it manufactures.
[0010] First, as shown in (A) of drawing 4 , after carrying out punching of the perforation 14 of both sides to the tape-like base film 13, as shown in (B), the photoresist 15 of a front flesh side and 16 are applied on copper foil 11 and 12 of front flesh-side both sides.
[0011] Next, as shown in (C), after exposing and developing the photoresist 15 of a front flesh side, and 16, as shown in (D), table flesh-side both sides are etched for pattern formation. Etching on the back is performed about the place which needs thinness. In addition, when the handling by the user becomes a problem, etching on the back is performed by the final process of a user.
[0012] Subsequently, as shown in (E), after exfoliating a photoresist about front flesh-side both sides, plating 17 is performed as shown in (F).
[0013] Next, as shown in (G), after printing a solder resist 18 on a side front, as shown in (H), punching of the appearance hole 19 is carried out about each package part. Even after carrying out punching of this appearance hole 19, the perimeter of the perforation 14 of both sides becomes [being reinforced with copper foil 12 on the back with as, and].

[Translation done.]

* NOTICES *

JPO and NCIPI are not responsible for any
damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the sectional view of the tape-like base film which was being used in the former.
[Drawing 2] It is the sectional view in which dividing the process of a conventional method into (J) from (A), and showing it.
[Drawing 3] It is the sectional view of the tape-like base film used in this invention.
[Drawing 4] It is the sectional view in which dividing the process of the manufacture approach by this invention into (H) from (A), and showing it.
[Description of Notations]
10 Polyimide Film
11 Copper Foil on Side Front
12 Copper Foil on Background
13 Tape-like Base Film
14 Perforation
15 Photoresist on Side Front
16 Photoresist on Background
17 Plating
18 Solder Resist
19 Appearance Hole

[Translation done.]

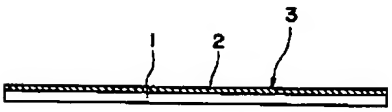
* NOTICES *

JPO and NCIPI are not responsible for any
damages caused by the use of this translation.

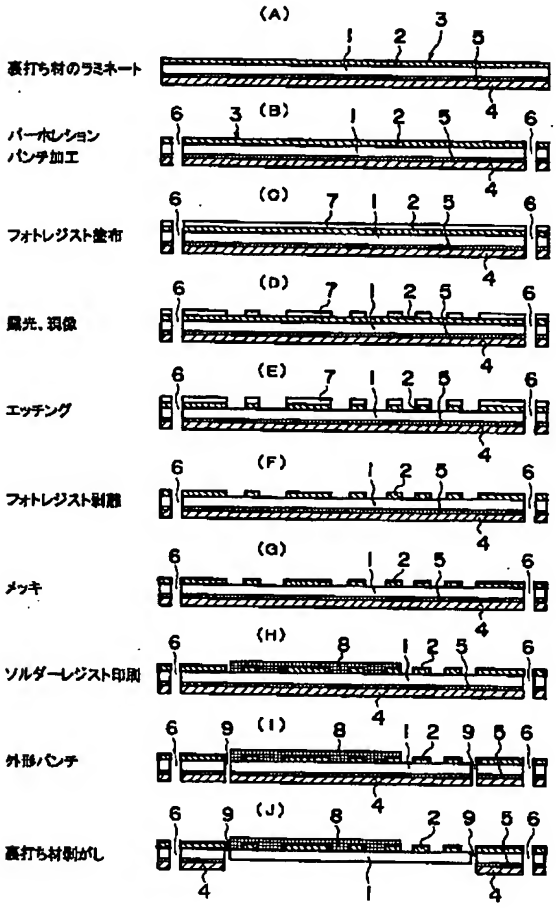
1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DRAWINGS

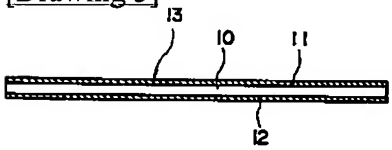
[Drawing 1]



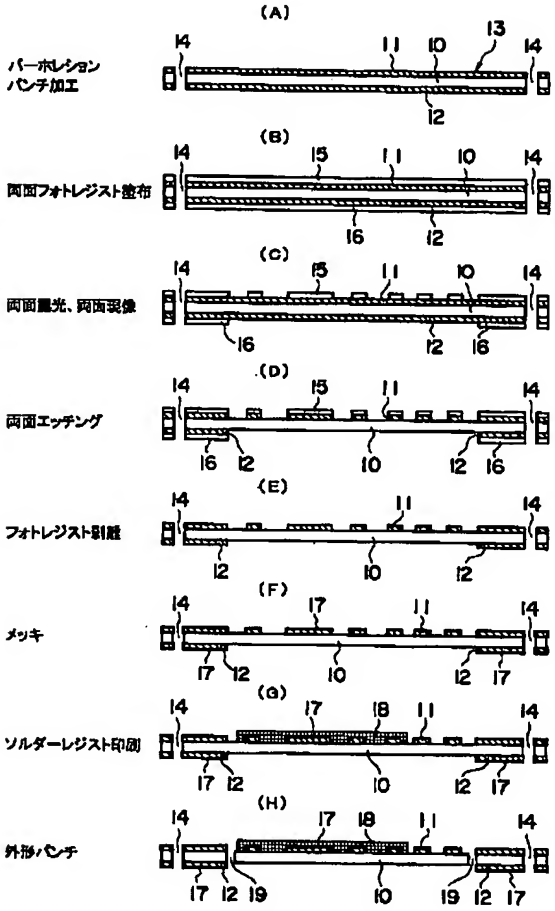
[Drawing 2]



[Drawing 3]



[Drawing 4]



[Translation done.]

(19)日本国特許庁（ＪＰ）　(12)公開特許公報（A）　(11)特許出願公開番号
特開2000－332062
（P2000－332062A）
(43)公開日　平成12年11月30日(2000.11.30)

(51)Int.Cl.'	識別記号	ＦＩ	ﾃｰﾏｺｰﾄﾞ(参考)
Ｈ０１Ｌ　21/60	３１１	Ｈ０１Ｌ　21/60	３１１Ｗ　５Ｆ０４４

審査請求　未請求　請求項の数２　ＯＬ　（全　４　頁）

(21)出願番号　特願平11－136555

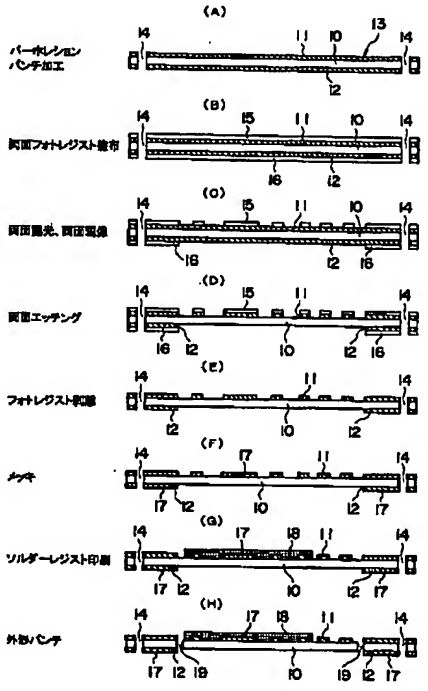
(22)出願日　平成11年５月18日(1999.5.18)

(71)出願人　391022186
新藤電子工業株式会社
東京都墨田区横網１丁目10番５号
(72)発明者　中島　栄一
千葉県東葛飾郡沼南町鷲野谷1027番地　新藤電子工業株式会社内
(74)代理人　100074310
弁理士　中尾　俊介

Ｆターム(参考)　5F044 MM04 MM08 MM48

(54)【発明の名称】　ＴＡＢ用薄膜テープキャリアの製造法

(57)【要約】
【課題】　付加的な裏打ち材を不要として、ソルダーレジスト工程での裏打ち材の問題を解消するとともに、裏打ち材の貼り付け工程と剥離工程を省略してコストダウンを図る。
【解決手段】　表面の銅箔１１と同じ銅箔１２を補強材として裏面に形成したベースフィルム１３を用い、その両面について、フォトレジストコート、露光、現像、エッチング、レジスト剥離、メッキ処理を行う。



1

【特許請求の範囲】

【請求項１】　テープ状ベースフィルムの表面に金属箔を形成し、該金属箔上に、フォトレジストコート、露光、現像、エッチング、レジスト剥離、メッキの工程を経て表側に配線パターンを形成するＴＡＢ用薄膜テープキャリアの製造法において、前記テープ状ベースフィルムとして、その裏面に、表面の金属箔と同じ金属箔を補強材として形成したベースフィルムを用い、その両面にフォトレジストコート、露光、現像、エッチング、レジスト剥離、メッキの工程を経て表側に配線パターンを形成することを特徴とする、ＴＡＢ用薄膜テープキャリアの製造法。

【請求項２】　表面の金属箔と裏面の金属箔が銅箔である、請求項１に記載のＴＡＢ用薄膜テープキャリアの製造法。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】この発明は、ＩＣ等のデバイスを実装して電子回路機器や電子回路基板や液晶表示装置などに搭載されるＴＡＢ（Tape Automated Bonding）用テープキャリア、特に極薄のテープキャリアに関する。

【０００２】

【従来の技術】近年、電子機器の軽量化、薄型化、小型化の要請がますます強くなっている。これらの要請に応えるために、配線板が薄く、フレキシブルなＴＡＢ製品が開発されている。

【０００３】ところが、厚さが５０μｍ未満の極薄のＴＡＢ用テープキャリアは、既存の製造設備では機械にかからなかったため、図１に示すようにポリイミドフィルム１の表面に銅箔２を形成した極薄のテープ状ベースフィルム３を用いる場合、これにある程度腰を持たせるために、付加的に裏打ちして図２に示すように製造していた。

【０００４】すなわち、図２において、（Ａ）に示すようにポリイミドフィルム１の裏面に裏打ち材４を接着剤５にて貼り付けてから、（Ｂ）～（Ｊ）に順次示すように、パーホレーション６のパンチング、フォトレジスト７の塗布、片面露光と片面現像、エッチング、フォトレジスト剥離、メッキ、ソルダーレジスト８の印刷、パンチングによる各パッケージ部分の外形加工（外形孔９のパンチング）、各パッケージ部分の裏打ち材剥離の工程を経て製造していた。なお、（Ｊ）の裏打ち材剥離工程において、裏面全体の裏打ち材を剥離する場合もある。

【０００５】

【発明が解決しようとする課題】しかし、裏打ち材は耐熱性が無いものが多く、ソルダーレジスト工程における、オーブンの中で加熱するオーブンキュアで問題が生じ、また裏打ち材の貼り付け工程と剥離工程が必須であった。

2

【０００６】そこで、この発明の目的は、付加的な裏打ち材を不要として、ソルダーレジスト工程での裏打ち材の問題を解消するとともに、裏打ち材の貼り付け工程と剥離工程を省略してコストダウンを図ることにある。

【０００７】

【課題を解決するための手段】この発明では、テープ状ベースフィルムとして、その裏面に、表面の金属箔と同じ金属箔を補強材として形成したベースフィルムを用い、その両面にフォトレジストコート、露光、現像、エッチング、レジスト剥離、メッキの工程を経て表側に配線パターンを形成する。表面の金属箔と裏面の金属箔は、銅箔を用いると良い。

【０００８】

【発明の実施の形態】次に、この発明の実施の形態を図面を参照して説明する。

【０００９】この発明では、図３に示すように、ポリイミドフィルム１０の表裏両面に銅箔１１・１２を形成したテープ状ベースフィルム１３を用い、裏側の銅箔１２を補強材として機能させて図４に示すように製造する。

【００１０】先ず、図４の（Ａ）に示すようにテープ状ベースフィルム１３に、両側のパーホレーション１４をパンチングした後、（Ｂ）に示すように表裏両面の銅箔１１・１２上に表裏のフォトレジスト１５・１６を塗布する。

【００１１】次に、（Ｃ）に示すように表裏のフォトレジスト１５・１６を露光及び現像した後、（Ｄ）に示すようにパターン形成のため表裏両面をエッチングする。裏面のエッチングは、薄さが必要なところについて行う。なお、客先での取り扱いが問題になる場合には、裏面のエッチングは客先の最終工程で行う。

【００１２】次いで、（Ｅ）に示すように表裏両面についてフォトレジストを剥離してから、（Ｆ）に示すようにメッキ１７を施す。

【００１３】次に、（Ｇ）に示すように表側にソルダーレジスト１８を印刷した後、（Ｈ）に示すように各パッケージ部分について外形孔１９をパンチングする。この外形孔１９をパンチングした後も、両側のパーホレーション１４の周囲は裏面の銅箔１２にて補強されたままとなる。

【００１４】

【発明の効果】この発明によれば、表面の金属箔と同じ金属箔を補強材として裏面に形成したベースフィルムを用い、その両面について、フォトレジストコート、露光、現像、エッチング、レジスト剥離、メッキ処理を行うので、両側のパーホレーションの周囲は裏面の金属にて補強されたままとなる。従って、既存設備で流動可能で、今まで製造できなかった極薄のテープキャリアを既存設備で製造できる。また、裏打ち材の貼り付け工程と剥離工程が不要になるので、コストダウンが図れる。

【図面の簡単な説明】

3　　4

【図１】従来において使用していたテープ状ベースフィルムの断面図である。

【図２】従来法の工程を（Ａ）から（Ｊ）に分けて示す断面図である。

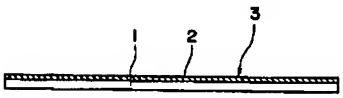
【図３】この発明において使用するテープ状ベースフィルムの断面図である。

【図４】この発明による製造方法の工程を（Ａ）から（Ｈ）に分けて示す断面図である。

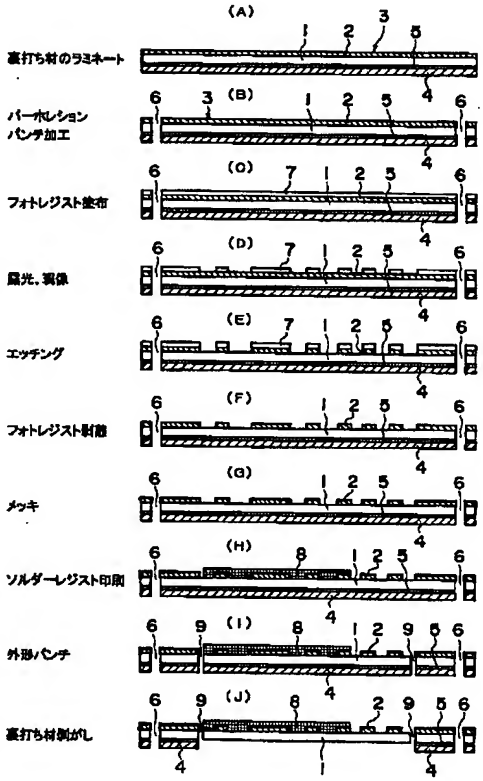
【符号の説明】

１０　ポリイミドフィルム
１１　表側の銅箔
１２　裏側の銅箔
１３　テープ状ベースフィルム
１４　パーホレーション
１５　表側のフォトレジスト
１６　裏側のフォトレジスト
１７　メッキ
１８　ソルダーレジスト
１９　外形孔

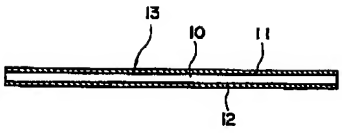
【図１】



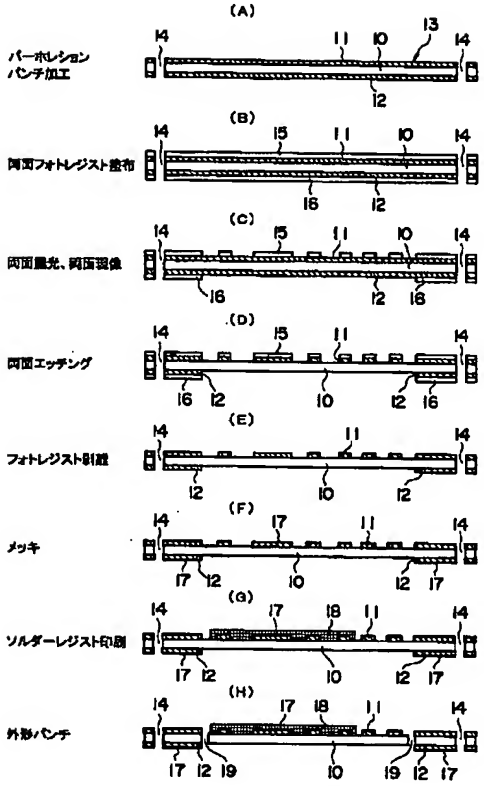
【図２】



【図３】



【図4】


(A)
パーホレション
パンチ加工
(B)
両面フォトレジスト塗布
(C)
両面露光、両面現像
(D)
両面エッチング
(E)
フォトレジスト剥離
(F)
メッキ
(G)
ソルダーレジスト印刷
(H)
外形パンチ